REMARKS

Claims 1, 3-10 and 12-16 are pending in the present application. Claims 1, 7 and 14 are in independent form. Claims 1, 7 and 14 are amended. In view of the above amendments and the following remarks, favorable reconsideration and allowance of the present application is respectfully requested.

I.   CLAIM AMENDMENTS

By the present Amendment, claims 1, 7 and 14 are amended. The amendments to claims 1, 7 and 14 are supported, at least, by paragraph [0008] of the published Specification, U.S. Publication No. 2006/0127867 A1.

Thus, Applicant submits that the amendments do not introduce new matter.

II.   CITED ART REJECTIONS

(A)   Claims 1, 3-10 and 12-16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Anderson et al. (hereinafter "Anderson"), U.S. Patent No. 7,371,067 B2 in view of Charbel et al. (hereinafter "Charbel"), U.S. Patent No. 7,191,110 B1. Applicant respectfully traverses the rejection.

i.   INDEPENDENT CLAIM 1

Amended independent claim 1 is directed to a simulation system for training and assessing the performance of an endovascular procedure,

wherein (*inter alia*) the system is "configured to recursively calculate said simulated fluid flow in the simulated vessel and the fluid flow changes in said adjacent simulated vessels, the recursive calculation being a function of at least one parameter, wherein at least one parameter is a result of a real time simulation of a heart function" and "configured to provide the simulated fluid flow change in real time." Applicant submits that Anderson fails to explicitly teach, or otherwise suggest, the above-identified features recited in amended independent claim 1.

a. THE COMBINATION OF ANDERSON AND CHARBEL

First, Anderson, directed to a system for designing customized, patent-specific medical devices, teaches that "[a]ccurate modeling of a 3D vascular network relies on good representations of vascular segments and bifurcations." Anderson, col. 9, ll. 61-62. Anderson further teaches that "**[f]rom the segmented medical images**, a central model of a vasculature can be constructed. This model is represented in a hierarchical structure consisting of vessel topology (using a parent-child relationship to represent the topological connectivity among a list of vascular segments), vessel geometry (coordinates and radii), and vessel material property." Anderson, col. 11, ll. 48-57 (emphasis added). Thus, Anderson teaches that the flow is calculated based on an image, and not as "a result of a real time simulation of a heart function" as recited in amended independent claim 1.

Furthermore, Charbel, directed to an apparatus for modeling circulation in a living subject using computer simulation, teaches that in order to

overcome the problems with 2D localization using cine phase contrast magnetic resonance (PCMR), a 3D dimensional process was developed. See column 13, ll. 52-59 of Charbel. In particular, Charbel teaches that "[t]he 3-D localization method of slice selection was developed using a 1.5 T **imager** (manufacturing by GE of Milwaukee, Wis.). An axial MRA with zero interspacing covering the circle of Willis was gathered and transferred to a SGI workstation. A stack of **2D images** can then be converted into 3-D volume data. The volume data can be described as follows: $V(x, y, z) = I_k(x, y)$, where k=0, 1, ...N-1, z = k*T, $I_k(x, y)$ is the kth **MRA image**, T is the slice thickness, and N is the number of slices." Charbel, col. 13, l. 59-col. 14, l. 2 (emphasis added). Thus, Charbel teaches that the blood flow is calculated with the use of 2D images and MRA images, not as "a result of a real time simulation of a heart function" as recited in amended independent claim 1.

Likewise, Anderson and Charbel fail to teach, or suggest, a system "configured to provide the simulated fluid flow change in real time" also as recited in amended independent claim 1 .

Secondly, as noted above, Anderson is directed to a system for designing customized patent-specific medical devices, and Charbel is directed to an apparatus for modeling circulation in a living subject using computer simulation. Neither Anderson or Charbel is directed to "a simulation system for training and assessing the performance of an endovascular procedure" as recited in amended independent claim 1.

For at least these reasons, Applicant submits that Anderson in view of Charbel fails to explicitly teach, or otherwise suggest, a simulation system for

training and assessing the performance of an endovascular procedure, wherein (*inter alia*) the system is "configured to recursively calculate said simulated fluid flow in the simulated vessel and the fluid flow changes in said adjacent simulated vessels, the recursive calculation being a function of at least one parameter, wherein at least one parameter is a result of a real time simulation of a heart function" and "configured to provide the simulated fluid flow change in real time" as recited in amended independent claim 1.

Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection to independent claim 1, and claims 3-6 and 12 at least by virtue of their dependency on independent claim 1.

ii.   INDEPENDENT CLAIM 7

Amended independent claim 7 is directed to a method of simulating flow of a body fluid in a simulation system for training and assessing the performance of an endovascular procedure where the simulation system includes a control unit and an interface unit, said control unit being configured to communicate with said interface unit to simulate handling of at least one instrument interfaced by said interface unit, the method including (*inter alia*) "recursively calculating a fluid flow of said vessels having the hierarchical structure until flow and pressure in all branches of said hierarchical structure are solved, the recursive calculation being a function of at least one parameter, wherein at least one parameter is a result of a real time simulation of a heart function" and "the simulated fluid flow change is provided by the simulation system in real time." Thus, Applicant submits

that independent claim 7 is patentable over the combination of Anderson and Charbel for similar reasons as given above with respect to amended independent claim 1.

As such, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection to independent claim 7, and claims 8-10 and 13 at least by virtue of their dependency on independent claim 7.

iii.   INDEPENDENT CLAIM 14

Amended independent claim 14 is directed to a simulation system for training and assessing the performance of an endovascular procedure, wherein (*inter alia*) "the system is configured to recursively calculate said simulated fluid flow in the simulated vessels and fluid flow changes in adjacent simulated vessels, the recursive calculation being a function of at least one parameter, wherein at least one parameter is a result of a real time simulation of a heart function" and "the system is further configured to provide the simulated fluid flow change in real time." Thus, Applicant submits that independent claim 14 is patentable over the combination of Anderson and Charbel for similar reasons as given above with respect to amended independent claim 1.

As such, Applicant respectfully requests that the Examiner reconsider and withdraw the rejection to independent claim 14, and claims 15 and 16 at least by virtue of their dependency on independent claim 14.

CONCLUSION

Accordingly, in view of the above, reconsideration of the rejections and allowance of each of claims 1, 3-10 and 12-16 in connection with the present application is earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant hereby petitions for a three (3) month extension of time for filing a reply to the outstanding Office Action and submit the required $555.00 extension fee herewith.

Should there be any matters that need to be resolved in the present application; the Examiner is respectfully requested to contact the undersigned at the telephone number below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By _____

John A. Castellano, Reg. No. 35,094

P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

JAC/CDW

983627.1